

REMARKS**Claim Rejections*****Status of Claims***

The July 10, 2006 Office Action rejected claims 1, 4-21 and 23-25. In view of the foregoing remarks, reconsideration of the application is respectfully requested.

Applicants thank the Examiner for withdrawing the rejection to claim 1 based on Young et al. in light of Applicants' response to the previous Office Action.

Claim Rejections under 35 U.S.C. § 103

Claims 1, 4-5, 8-14, and 18-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Young et al., U.S. Patent No. 5,622,615 (hereinafter "Young") in view of Goens et al., U.S. Patent No. 3,972,795 (hereinafter "Goens"). Applicants respectfully traverse this rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference(s) must teach or suggest all the claim limitations. MPEP § 2143.

In general, Young discloses a sulfur dioxide-free process for the production of high purity metallic copper from copper-matte wherein copper-matte is leached under oxidizing conditions in a ferric-containing acid copper sulfate electrolyte leach assembly. The Young process seeks to overcome the release of large amounts of sulfur dioxide gas discharged into the atmosphere in response to the ever increasing emission regulations imposed by state and federal authorities.

The Young leach assembly includes one or more leach reactors to yield a copper-rich electrolyte, and copper cathode is produced in an electrowinning assembly that is physically decoupled from the leaching assembly and may include one or more electrowinning cells (in series). The process operates at ambient pressure and temperatures less than the boiling point.

The Examiner admits that Young does not teach the use of a flow-through anode. The Examiner nevertheless contends that Goens cures the deficiencies of Young by teaching “providing an electrolytic cell with flow-through anodes and cathodes, providing a flow of electrolyte through the cell, the electrolyte including copper and solubilized ferrous iron and removing at least a portion of the copper from the electrolyte at the at least one cathode.” The Examiner states that “the flow-through cell [of Goens] was capable of higher efficiency than an electrowinning cell using non-flow-through electrodes.” The Examiner concludes that it “would have been obvious to one of ordinary skill in the art to have performed the process of Young et al in the flow-through cell of Goens et al because Goens et al teach that the flow-through cell provided increases in copper electrowinning efficiency.” Applicants respectfully disagree.

In general, Goens discloses a membrane-free axial flow electrolytic cell in which the anodes and cathodes are perforated and lie transversely across a conduit through which an ion-containing and conducting medium is pumped. The Goens device attempts to address electrolytic recovery of metal values from acid leach solutions from low grade ores, and for the carrying out of electrochemical reactions such as the production of sodium hypochlorite or sodium chlorate from NaCl. The Goens device is targeted toward enabling “efficient recovery of low concentrations of desired ions from the ion containing and conducting medium which concentrations were prior to this time thought to be uneconomically recoverable.” Column 1, lines 59-62.

As an initial matter, Applicants submit that Goens teaches away from the presently claimed invention, as well as the invention disclosed and claimed in Young. References cannot be combined where a reference teaches away from their combination. MPEP § 2145 X D(2), citing *In re Grasselli*, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983). Goens is directed primarily towards recovery of metal values from low grade ores—and in the case of copper, from copper-containing solutions having a copper concentration of less than about 2 grams per liter. See column 6, lines 50-51. In fact, Goens repeatedly contrasts the utility of its device and related techniques to conventional and “new” techniques in the art for recovery of copper from copper-bearing solutions—the same classes of copper recovery “techniques” into which the Young invention and Applicants’ invention would be deemed by those of ordinary skill in the art to fall. In particular, Applicants note that Table II and the text accompanying it (at column 8 of the Goens reference) contrast the Current Density:Copper Concentration ratios of the Goens invention and the prior art:

As will be noted in the following Table II in the electrowinning of conventional copper per liter, the normal ASF/Cu ratio is 0.5 to 1. New techniques have improved the ratio by a factor of up to 7. In the case of the very low concentrations we are able to use, we are able to realize ratios of up to 100 times those conventionally obtained and from 7 to 10 times those of improved techniques.

Moreover, if the other operating parameters in Goens (e.g., cell voltage of 2-10V, acid concentration of 5 g/L, total iron concentration of 0-5 g/L) are considered in the context of the disclosed operability of the Goens invention, it becomes apparent that one skilled in the art could not combine the teachings of Goens and Young to obviate the present invention. Nowhere does Goens teach or suggest that its device would even be operable at the copper concentrations, acid concentrations, and cell voltages utilized in Young, and in fact, Goens’ comparisons in Table II appear to eliminate any suggestion that it would be. Applicants respectfully submit that one of

ordinary skill in the art would have no motivation to combine the teachings of Goens with the teachings of Young. Given the divergent operating parameters of the processes disclosed in Goens and Young, one skilled in the art would have no reason to expect that mere application of the Goens device to the Young process would result in an increase in copper electrowinning efficiency—or, in fact, that it would even work at all.

By reading Young in view of Goens, Applicants submit that the Examiner is using hindsight reconstruction in an attempt to obviate Applicants' invention. It is well settled that it is impermissible for the Examiner to rely upon hindsight reconstruction to arrive at a determination of obviousness by using the claimed invention as an instruction manual or a template to piece together the teachings of the prior art so that the claimed invention is rendered obvious.

Claims 4-5, 8-14, and 19-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Young in view of Goens as applied to claims 1 and 18 as set forth above.

In light of the above remarks with respect to independent claims 1 and 18 (from which claims 4-5, 8-14, and 19-21 variously depend), Applicants respectfully submit that claims 4-5, 8-14, and 19-21 are allowable as currently pending, for each is dependent upon an allowable base claim.

Claims 15-17 and 23-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Young in view of Goens as applied to claims 1 and 18 as set forth above, and further in view of Sandoval et al., U.S. Patent No. 5,492,608 (hereinafter "Sandoval"). Applicant respectfully traverses this rejection.

The Young and Goens disclosures are discussed in detail above. Sandoval discloses a novel manifold for use in a copper electrowinning cell, but is relied upon by the Examiner as teaching recycling a copper electrowinning electrolyte through activated carbon modules and

exposing the electrolyte to sulfur dioxide gas to reduce the ferric ions back to ferrous ions to form a regenerated electrolyte that is fed back to the cell.

In light of the above remarks with respect to independent claims 1 and 18 (from which claims 15-17 and 23-25 variously depend), Applicants respectfully submit that claims 15-17 and 23-25 are allowable as currently pending.

In view of the foregoing, Applicants submit that claims 1, 4-21, and 23-25, as amended, are allowable over the prior art of record. Accordingly, Applicants respectfully request reconsideration and the withdrawal of the rejections with respect to these claims.

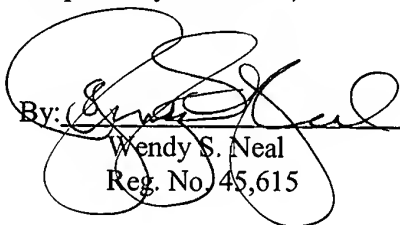
CONCLUSION

In view of the foregoing, Applicants respectfully submit that all of the pending claims are allowable over the prior art of record. Reconsideration of the application and allowance of all pending claims are earnestly solicited. Should the Examiner wish to discuss any of the above in greater detail, the Examiner is invited to telephone Wendy S. Neal at (602) 382-6334 at the Examiner's convenience.

The Commissioner is hereby authorized to charge any fees that may be required, or credit any overpayment, to Deposit Account No. 19-2814. **This statement does NOT authorize charge of the issue fee.**

Respectfully submitted,

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